MediaConverter Series

Operation Manual

FCC Radio Frequency Interference Statement

MediaConverter/1 and /4

This equipment has been tested and found to comply with the limits for a Class B computing device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The use of non-shielded I/O cables may not guarantee compliance with FCC RFI limits. This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

MediaConverter/8 and /12

This equipment has been tested and found to comply with the limits for a Class A computing device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The use of non-shielded I/O cables may not guarantee compliance with FCC RFI limits. This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

Warranty

IMC Networks warrants to the original end-user purchaser that this product, EXCLUSIVE OF SOFTWARE, shall be free from defects in materials and workmanship under normal and proper use in accordance with IMC Networks' instructions and directions for a period of six (6) years after the original date of purchase. This warranty is subject to the limitations set forth below.

At its option, IMC Networks will repair or replace at no charge the product which proves to be defective within such warranty period. This limited warranty shall not apply if the IMC Networks product has been damaged by unreasonable use, accident, negligence, service or modification by anyone other than an authorized IMC Networks Service Technician or by any other causes unrelated to defective materials or workmanship. Any replaced or repaired products or parts carry a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

To receive in-warranty service, the defective product must be received at IMC Networks no later than the end of the warranty period. The product must be accompanied by proof of purchase, satisfactory to IMC Networks, denoting product serial number and purchase date, a written description of the defect and a Return Merchandise Authorization (RMA) number issued by IMC Networks. No products will be accepted by IMC Networks which do not have an RMA number. For an RMA number, contact IMC Networks at PHONE: (800) 624-1070 (in the U.S and Canada) or (949) 465-3000 or FAX: (949) 465-3020. The end-user shall return the defective product to IMC Networks, freight, customs and handling charges prepaid. End-user agrees to accept all liability for loss of or damages to the returned product during shipment. IMC Networks shall repair or replace the returned product, at its option, and return the repaired or new product to the end-user, freight prepaid, via method to be determined by IMC Networks. IMC Networks shall not be liable for any costs of procurement of substitute goods, loss of profits, or any incidental, consequential, and/or special damages of any kind resulting from a breach of any applicable express or implied warranty, breach of any obligation arising from breach of warranty, or otherwise with respect to the manufacture and sale of any IMC Networks product, whether or not IMC Networks has been advised of the possibility of such loss or damage.

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About the Modular Media Converters

The Modular Media Converter Series includes modules that convert copper to single-mode or multi-mode fiber at Ethernet, Fast Ethernet and Gigabit speeds.

Modular Media Converter series chassis provide power to media converter modules, and are available with one, four, eight or twelve slots for installing any combination of McPIMs (10Mbps Ethernet), McLIMs (100 Mbps Fast Ethernet), McLIM TP-TX/FX (Switching 10/100 Mbps) and McGigabit modules (1.25 Gbps Ethernet).

Media Converter	Description
1	Is a standalone chassis which includes one media conversion module slot, and a fixed, internal 115/230 VAC power supply.
4	Is a standalone chassis which includes four media conversion module slots, and a fixed, internal 120/240 VAC power supply.
8	Is a 1U high, Rackmountable chassis that includes eight media module slots and a fixed 120/240 VAC power supply.
12	Is a Rackmountable chassis and includes twelve media conversion module slots and a 115/230 VAC power supply. MediaConverter/12 is 1U high and has the power on the rear of the chassis with media conversion module slots on the front. For redundancy a second power supply maybe installed.

About McPIMs

McPIMs (Media Converter Port Interface Modules) are 10 Mbps Ethernet modules which provide a single-conversion between 10Base-T twisted pair and 10Base-FL single-mode or multi-mode fiber. McPIMs include one RJ-45 connector and one pair of ST or SC fiber optic connectors. Each McPIM requires one slot in a media converter chassis.

About McLIMs

McLIMs (Media Converter Link Interface Modules) are 100 Mbps Fast Ethernet modules which provide a single-conversion between 100Base-TX twisted pair and 100Base-FX (McLIM TX/FX) or 100Base-SX (McLIM TX/SX) fiber and support Half or Full-Duplex.

McLIM TP-TX/FX is an Auto Negotiating, switching media converter which offers plug-and-play operation to convert 10 Mbps or 100 Mbps, Half-or-Full-Duplex twisted pair to 100Base-FX, Full-Duplex fiber. McLIM TP-TX/FX allows jumbo packets of up to 1916 bytes.

McLIMs include one RJ-45 connector for the twisted pair port and one pair of fiber connectors for the fiber port. McLIMs are also available in single-strand fiber versions which include one SC fiber connector. Each McLIM requires one slot in a media converter chassis.

About McGigabit

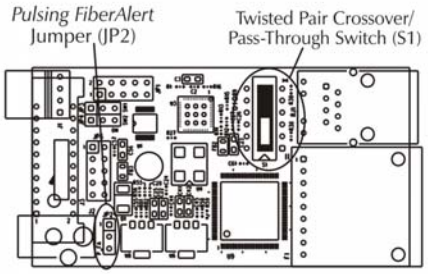
McGigabit is a Gigabit Ethernet module which provides a single-conversion between 1000Base-SX (multi-mode) or LX (single-mode) fiber and 1000Base-T copper. McGigabit offers plug-and-plan operation, and always operates at Full-Duplex. McGigabit modules include one RJ-45 connector for the twisted pair port and one pair of SC fiber connectors. Single-strand single-mode fiber versions are also available. Each McGigabit requires one slot in a media converter chassis.

NOTE
This Manual refers to McPIM, McLIM and McGigabit modules as "Media Conversion Modules" except where differences require indication.

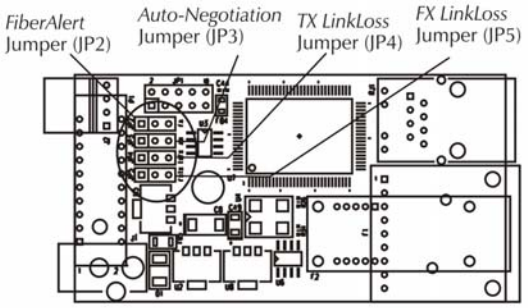
Configuring Media Conversion Modules

The McPIMs and McLIMs can be configured for a variety of features before installation (see board Diagrams/Configuration Table for specific information). **McLIM TP-TX/FX and McGigabit have plug-and-play operation and require no configuration.** The illustrations show the location of the configuration jumpers and switches on the various Media Conversion Modules.

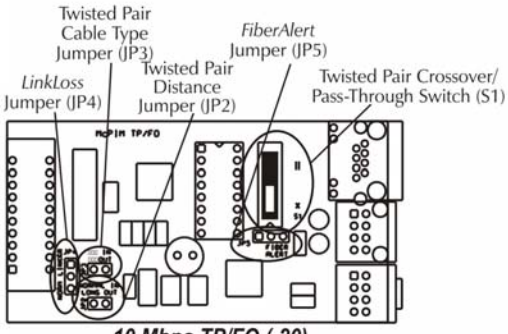
Board Diagrams and Jumper/Switch Settings



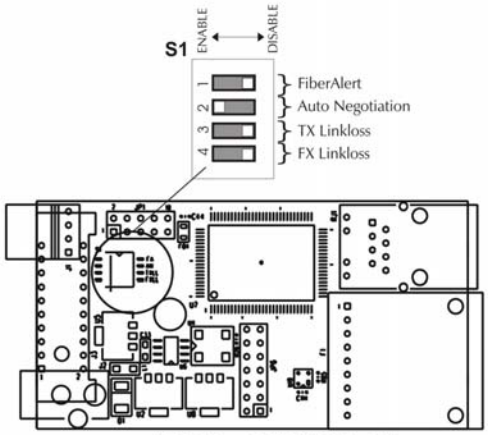
10 Mbps TP/FO w/Pulsing FiberAlert (-10)



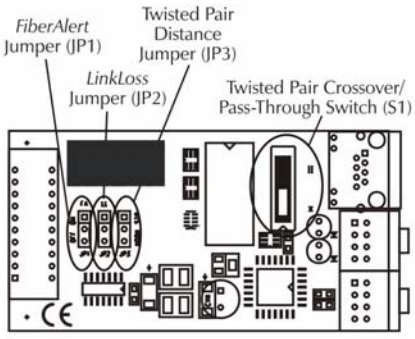
100 Mbps TX/FX w/AutoCross MDI-II/MDI-X (-00, -10)



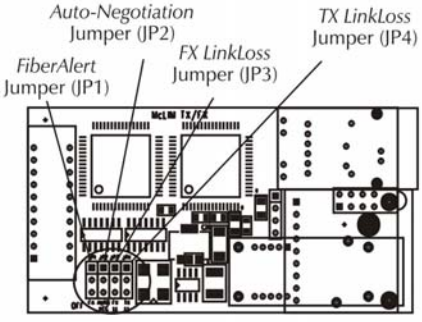
10 Mbps TP/FO (-20)



100 Mbps TX/FX (-20, -30)



10 Mbps TP/FO (-40)



100 Mbps TX/FX (-50)

NOTE
To determine which board diagram matches the module (-20, -30, -40, -50, etc.), compare the jumper locations with the diagrams found above. 10/100 Switching modules and Gigabit modules sets do not require any configuration and are not shown above.

Media Converter Jumper/DIP Switch Configuration Table					
Module/Board	**Feature**	**Jumper Position**	**ON (pins)**	**OFF (pins)**	**Factory Default**
McPIM TP/FO (-20)	TP Dist. (100+ M) Shielded Cable FO LinkLoss FiberAlert	JP2 JP3 JP4 JP5	one or none both 1-2 2-3	Both one or none 2-3 1-2	OFF OFF OFF OFF
McPIM TP/FO (-40)	FiberAlert FO LinkLoss TP Dist. (100+ M)	JP1 JP2 JP3	1-2 1-2 1-2	2-3 2-3 2-3	OFF OFF OFF
McPIM TP/FO (-10) with Pulsing FiberAlert	Pulsing FiberAlert TP LinkLoss FO LinkLoss	JP2 N/A N/A	1-2 ALWAYS ENA ALWAYS ENA	2-3 N/A N/A	OFF ALWAYS ENA ALWAYS ENA
McLIM TX/FX (-50)	FiberAlert Auto Negotiation FX LinkLoss TX LinkLoss	JP1 JP2 JP3 JP4	1-2 1-2 1-2 1-2	2-3 2-3 2-3 2-3	OFF ON OFF OFF
McLIM TX/FX (-00, -10) TX/FX With AutoCross	FiberAlert Auto Negotiation TX LinkLoss FX LinkLoss	JP2 JP3 JP4 JP5	1-2 1-2 1-2 1-2	2-3 2-3 2-3 2-3	OFF ON OFF OFF
McLIM TX/FX (-20, 30) with AutoCross MDI-II/MDI-X	FiberAlert Auto Negotiation TX LinkLoss FX LinkLoss	S1 S2 S3 S4	N/A	N/A	OFF ON OFF OFF

NOTE
Some features may not be available on all versions of modules.

Twisted Pair Crossover/Straight-Through Connections

Whether using crossover or straight-through CAT5 twisted pair cabling, all Switching Modules will support both types of connections by one of the following methods:

AutoCross	McLIM TX/FX (-00) and McGigabit include AutoCross, a feature that automatically selects between a crossover workstation or straight-through connection depending on the connected device.
MDI-II/MDI-X Switch	All McPIMs feature a 2-position switch, located at position S1 (see table for location on boards), for selecting a crossover workstation connection or straight-through connection. The switch is labeled with "X" for a crossover connection (factory default) and an "II" for a straight-through connection. Select the appropriate setting by moving the switch to the proper position before installing the media conversion module. If uncertain whether crossover or straight-through is needed, set the switch to the position that makes the link LED glow.
Device-Dependent	The end device connected to the McLIM TX/FX and TX/SX (-50) determines the type of twisted pair connection: this McLIM does include AutoCross or a MDI-II/MDI-X switch.

Twisted Pair Cable Distance

Some McPIM TP/FOs features a 2-position jumper, located at position JP2, for selecting longer twisted pair cable distances (distances greater than 100 meters). Place the jumper over both pins for distances up to 100 meters (factory default). Remove the jumper shunt or place it on only one pin for distances of 100 meters or more.

NOTE
The product on the other side of the conversion must be able to support longer cable distances.

Twisted Pair Cable Type

Some McPIM TP/FOs (-20 and -40) features a 2-position jumper, located at position JP3, for selecting either a shielded or unshielded twisted pair link segment. Remove the jumper shunt or place it on only one pin to select an unshielded twisted pair link segment (factory default). Place the jumper shunt over both pins to select a shielded twisted pair link segment.

LinkLoss, FiberAlert and Link Fault Pass-Through

McPIM TP/FO and McLIM TX/FX and TX/SX include the following features:

- FO/FX LinkLoss (a.k.a. "Fiber LinkLoss" or "LinkLoss")
- TP/TX LinkLoss (a.k.a. "Twisted Pair LinkLoss" or "Reverse LinkLoss")
- FiberAlert and Pulsing FiberAlert

FiberAlert and LinkLoss are advanced troubleshooting features that can help you locate "silent failures" on your network. However, it is vital to understand exactly how FiberAlert and LinkLoss work, and how they will react in the network configuration, before attempting to install the enclosed module(s).

WARNING
Installing modules without understanding the effects of FiberAlert and LinkLoss can cause perfectly functioning units to appear flawed or non-functional.

Link Integrity

During normal operation, link integrity pulses are transmitted by all point-to-point Ethernet devices. When an IMC Networks media converter receives valid link pulses, it knows that the device to which it is connected is up and sending pulses, and that the copper or fiber cable coming from that device is intact. The appropriate "LNK" (link) LED is lit to indicate this.

The IMC Networks media converter also sends out link pulses from its copper and fiber transmitters, but normally has no way of knowing whether the cable to the other device is intact and the link pulses are reaching the other end. The combination of FiberAlert and LinkLoss allows this information to be obtained, even when physical access to a remote device (and its link integrity LED) is not available.

FO/FX LinkLoss

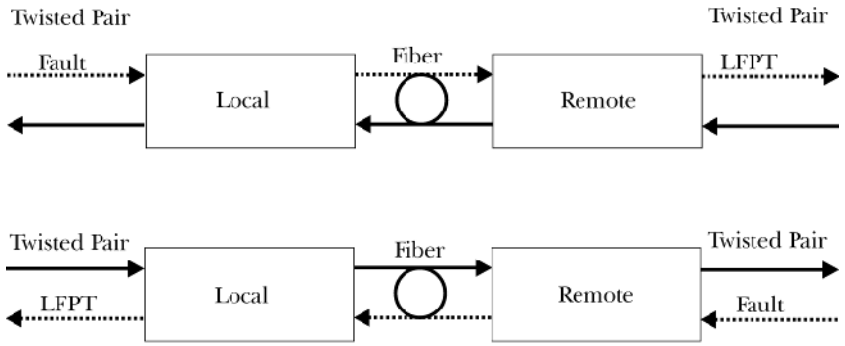
FO/FX LinkLoss is a troubleshooting feature. When a fault occurs on the fiber segment of a conversion, FO/FX LinkLoss detects the fault and passes this information to the twisted pair segment. If a media converter is not receiving a fiber link, FO/FX LinkLoss disables the transmitter on the media converter's twisted pair port. This results in a loss of link on the device connected to the twisted pair port.

TP/TX LinkLoss

TP/TX LinkLoss is another troubleshooting feature. When a fault occurs on the twisted pair segment of a conversion, TP/TX LinkLoss detects the fault and passes this information to the fiber segment. If a media converter is not receiving a twisted pair link, TP/TX LinkLoss disables the transmitter on the media converter's fiber port. This results in a loss of link on the device connected to the fiber port.

Link Fault Pass Through

Link Fault Pass Through (LFPT) is a troubleshooting feature that combines TX and FX LinkLoss from both the local and remote media converter modules (only available on the McLIM the 100 Mbps TX/FX -00, -10, -20, -30). LFPT is enabled by turning on both FX and TX LinkLoss on both modules. This feature allows both end segments of the conversion to detect link faults occurring in the media conversion chain. FiberAlert can also be added to the remote side of the pair to further assist in locating a fault.

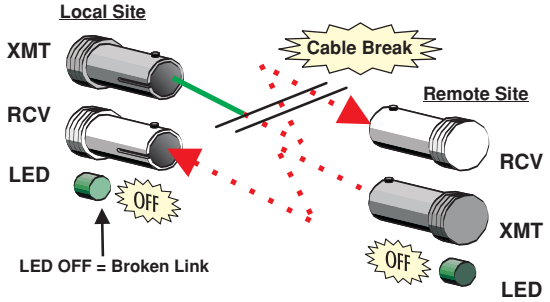


FX and TX LinkLoss enabled on both modules will enable LFPT

FiberAlert

FiberAlert minimizes the problems associated with the loss of one strand of fiber. If a strand is unavailable, the IMC Networks device at the receiver end notes the loss of link. The device will then stop transmitting data and the link signal until a signal or link pulse is received. The result is that the link LED on BOTH sides of the fiber connection will go out indicating a fault somewhere in the fiber loop. Using FiberAlert, a local site administrator is notified of a fault and can quickly determine where a cable fault is located.

WARNING
Enable FiberAlert on ONE side of a media conversion only; enabling it on both sides will keep both transmitters off indefinitely!

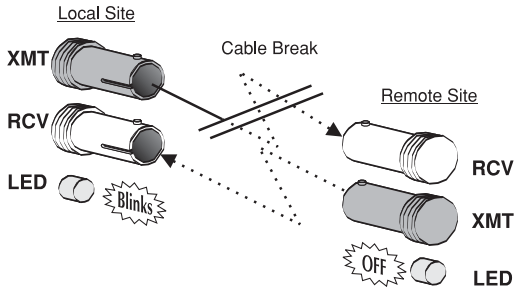


Product with *FiberAlert* enabled —Remote Site stops transmitting
Local Link LED is OFF indicating a break in the fiber loop

Pulsing FiberAlert

Pulsing FiberAlert minimizes the problems associated with the loss of one strand of fiber. If a strand is unavailable, the device at the receiver end notes the loss of link. The device will stop transmitting data and start sending link pulses. Until a valid link is received, the fiber link LED will be OFF on the device on the receiver side of the fiber strand with the fault while the fiber Link LED on the other unit will blink. Pulsing FiberAlert notifies a local site administrator of a fault, allowing quick determination of where a cable fault resides.

NOTE
Pulsing FiberAlert can be enabled on BOTH sides of a conversion.



Product with Pulsing *FiberAlert* enabled —
Remote Site stops transmitting
Local Link LED blinks, indicating a break in the fiber loop

Using FiberAlert and LinkLoss (All Models without LFPT Capability)

The following chart provides an overview of the troubleshooting features, their functionality and the recommended settings for a pair of media converters in a typical central/main site to remote site application:

LinkLoss / FiberAlert Comparison			
Feature	**Fault Location**	**Disabled LED**	**Enable at:**
FX LinkLoss	Fiber	Twisted Pair	Main Site Only
TX LinkLoss	Twisted Pair	Fiber	Remote Site Only
FiberAlert	Fiber	Fiber	Remote Site Only

For more information about these features, refer to their specific sections.

Configuring LinkLoss and FiberAlert

Configure LinkLoss and FiberAlert with separate 3-pin jumper blocks or DIP Switches located at various positions depending on module and board type. See the table to determine what features the module offers as well as the jumper locations and ON/OFF positions.

Auto Negotiation

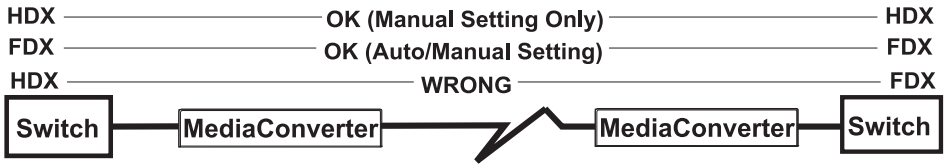
The following chart states the availability of the Auto Negotiation feature on media conversion modules.

Auto Negotiation Product Comparison		
10 Mbps Modules	Auto Negotiation	Not Available
100 Mbps Modules	Auto Negotiation	DIP Switch Selectable
10/100 Mbps Modules	Auto Negotiation	Always Enabled

Auto Negotiation on 100 Mbps Modules

When Auto Negotiation is enabled, the media converter negotiates as a 100 Mbps Full-Duplex device; if the device the media converter is connected to can operate at 100 Mbps Full-Duplex, a link will be established.

If the twisted pair port on the other device does not have the ability to Auto Negotiate, or if a 100 Mbps Half-Duplex connection is desired, Auto Negotiation on the media converter must be disabled. Half- and Full-Duplex settings must be manually set and match on both end devices to which the media converters are connected. The diagram below shows a typical application, followed by a table with three possible configurations.



End to End Connection	Switch	TX/FX
Half-Duplex	Manually configure HDX	Auto Negotiation Off
Full-Duplex	Manually configure FDX	Auto Negotiation Off
Full-Duplex	Auto Negotiation On	Auto Negotiation On

Configure Auto Negotiation on 100 Mbps Modules with a 3-pin jumper block located on the module's PCB or DIP Switch, depending on the Model. Refer to the Jumper Configuration Table of this manual to verify jumper position and default setting.

Auto Negotiation on 10/100 Switching Modules

Auto Negotiation is a standard feature on 10/100 Switching Modules. The fiber port always operates at 100 Mbps FDX; the copper port auto-senses the connected device's speed and duplex mode: 10 Mbps or 100 Mbps and HDX or FDX (including Flow Control).

NOTE
McLIM TPTX/FX is a Plug-And-Play device, therefore Auto Negotiation is always enabled.

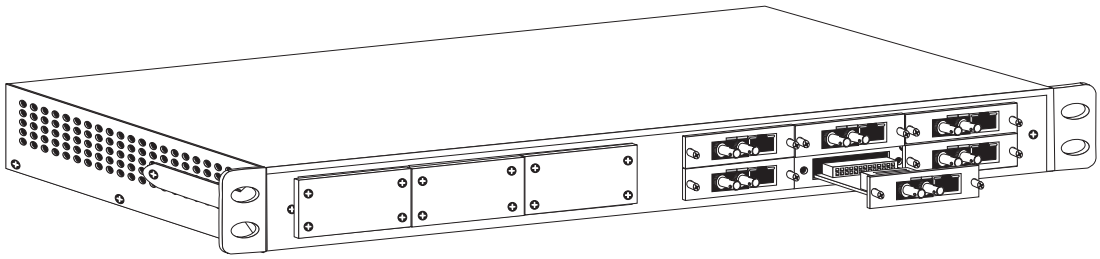
The following table states the availability of Auto negotiation on media conversion modules.

Auto Negotiation Product Comparison		
McPIM TP/FO Auto	Negotiation	Not Available/Applicable
McLIM TX/FX and TX/SX Auto	Negotiation	DIP Switch Selectable
McLIM TP-TX/FX	TX/FX Auto	Negotiation Always Enabled

Installing Media Conversion Modules

The media conversion modules can be installed in any available slot in a media converter chassis. Media conversion modules are hot-swappable.

Media conversion modules ship with brackets for securing them to the media converter chassis. To install a module, simply unscrew the blank bracket converting the slot where the module is installed. Slide the module into the chassis, via the card guides, until the module is seated securely in the connector. Hand tighten the thumb screw until snug. Finish tightening the thumb screw using a screw driver, being careful to not over-tighten.



NOTE
Media converter chassis ship with all but one media conversion module slot covered with "blank" brackets. Be sure to keep unused slots covered for EMI containment. It is a good idea to save any "blanks" removed during installation for future use if configuration requirements change.

Installation Tip
Since single-strand fiber products use optics that transmit and receive on two different wavelengths, the single-strand fiber products must be deployed in pairs, or connect two compatible IMC Networks single-strand fiber products. For example, connect Compact Media Converter, TX/SSFX-SM1310-SC (which has 1310 xmt and 1550 rcv) to a product which has 1550 xmt and 1310 rcv, e.g. 100 Mbps TX/SSFX-SM1550-SC Module. The two connected products must also have the same speed and distance capabilities (i.e. both are single-mode [20 km] or both are single/PLUS [40 km]).

Power Supply Installation

When installing a redundant power supply module into a powered-on 12-Slot chassis, IMC Networks recommends setting the ON/OFF switch on the module (if present) to OFF. After installing the power supply, turn its switch ON.

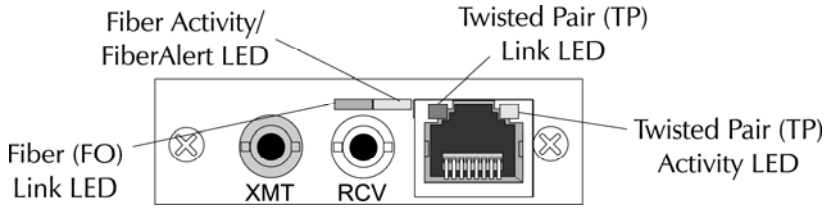
If the redundant power supply module does NOT have an ON/OFF switch, IMC Networks recommends powering-down the chassis before installing the power supply. Turn the chassis back ON after installing the power supply.

LED Operation

Each media conversion module features diagnostic LEDs (see diagrams below) that provide information on features and ports.

LEDs on on McPIM TP/FO

The LED functions for McPIM TP/FO with fiber ports are as follows:

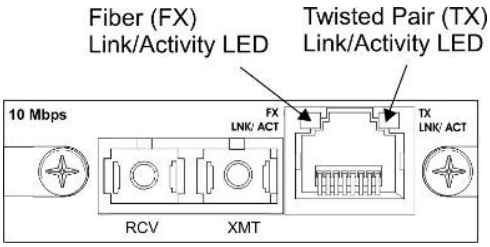


FO LINK	Glows green when link is established on the fiber port.
FIBERALERT	Glows amber when *FiberAlert* is enabled
TP LINK	Glows green when link is established on the TP port.
ACTIVITY	Blinks amber when data is being passed on either port.

NOTE
On a -40 McPIM TP/FO, the TP RCV, TP LNK and FO Link LEDs flicker at a rate proportional to the rate that passes on the ports; when the rate is low, the LEDs flicker visibly, while they appear to glow when the rate is high.

LEDs on McPIM TP/FO (-10)

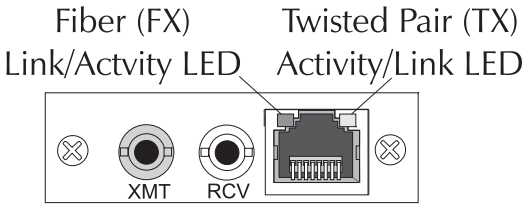
The LED functions on McPIM TP/FO (-10) are as follows:



FO LINK/ACT	Glows green when link is established on the FO port; blinks green when activity is detected on the port.
TP LINK/ACT	Glows amber when link is established on the TP port; blinks amber when activity is detected on the port.

LEDs on McLIM TP-TX/FX

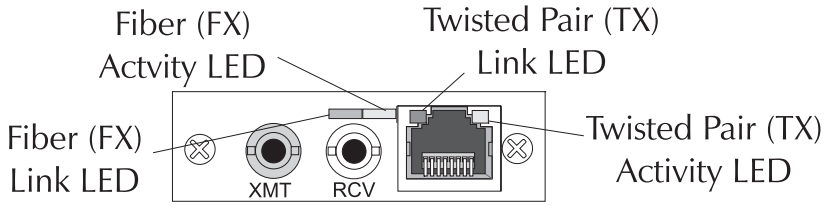
The LED functions on McLIM TP-TX/FX are as follows:



FX LINK/ACT	Glows green when link is established on the FX port; blinks green when activity is detected on the port.
TX LINK/ACT	Glows green when link is established on the TP/TX port; blinks green when activity is detected on the port.

LEDs on McLIM TX/FX and TX/SX (-50)

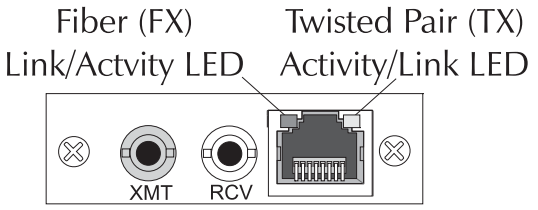
The LED functions on McLIM TX/FX are as follows:



FX LINK	Glows green when link is established on the FX port.
FX ACTIVITY	Glows amber if data is being passed on the FX port.
TX PAIR LINK	Glows green if link is established on the TX port.
TX ACTIVITY	Glows amber when data is being passed on the TX port.

LEDs on McGigabit and McLIM TX/FX and TX/SX (-00, -10, 20, 30)

The LED functions on McGigabit and McLIM TX/FX and TX/SX Modules are as follows:



FX LINK/ACT	Glows green when link is established on the FX port; blinks green when activity is detected on the port.
TX LINK/ACT	Glows amber when link is established on the TX port; blinks amber when activity is detected on the port.
ACTIVITY	Glows green in normal operation.

LEDs on MediaConverter Chassis

4-Slot and 8-Slot chassis include LEDs on the back of the chassis.

POWER	Glows green when chassis has power.
ACTIVITY	This LED blinks green when data is being passed on either port of a module that does not include Link/Activity LEDs; applicable to modules only.

LEDs on Power Supplies

Power supplies include the following LEDs:

POWER	Glows green when powered-on.

Installation Troubleshooting

The following information assists in troubleshooting the Modular Media Converters:

- During installation, first test the fiber and twisted pair connections with all troubleshooting features disabled, then enable these features, if desired, just before final installation. This will reduce the features' interference with testing.
- When working with units where the features cannot be connect, establish BOTH the twisted pair and fiber connections in order to establish link LEDs.
- To test a media converter by itself, have an appropriate fiber patch cable, then follow these steps to test:

1. Connect the media converter to the twisted pair device with a twisted pair cable.
2. Loop a single strand of fiber from the transmit port to the receive port of the media converter.
3. Verify that both the twisted pair and the fiber link (see LEDs, below) on the media converter.

NOTE
Use caution when conducting a loopback test; it is possible to create a network loop if connecting the twisted pair port to an active network switch. IMC Networks recommends connecting the twisted pair cable to a PC for this type of test.

- Make sure to use the appropriate twisted pair cable, and have the crossover/straight-through switch set correctly if the media converter does not include AutoCross.
- If using a high powered device (which is designed for long distance installations) for a short distance installation, the fiber transmitters may overdrive the receivers and cause data loss. If this is the case, an optical attenuator may need to be added to the connection.

Elevated Operating Ambient	If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
Reduced Air Flow	Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
Circuit Overloading	Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over current protection and supply wiring. Approximate consideration of equipment nameplate ratings should be used when addressing this concern.
Reliable Grounding	Reliable grounding of Rackmounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Specifications

Operating Temperature

+32°F to +122°F (0°C to +50°C); 5% to 95% (non-condensing), 0 – 10,000 ft. altitude

Storage Temperature

-13°F to +158°F (-25°C to +70°C); 5% to 95% (non-condensing)

*Some products may support lower operating and storage temperatures.

Electrical

Media Converter	AC Input Load	Maximum Heat Generated
1	115/230 or 120-240 VAC , 50/60Hz, 0.3A/0.15A	51 BTU/hour
4	120/240 VAC , 50/60Hz, 1A/0.5A	67 BTU/hour
8	120/240 or 100-240 VAC, 50/60Hz, 1.6/0.8A	67 BTU/hour
12	115/230 or 120-240 VAC, 50/60Hz, 1.2/0.6A	137 BTU/hour for AC unit

Dimensions

MediaConverter/1	H=1.6″	x	W= 4.8″	x	D=4.5″	(4 x 12.1 x 11.5 cm)
MediaConverter/4	H=1.7″	x	W= 9.1″	x	D=5″	(4.4 x 23.1 x 12.6cm)
MediaConverter/8	H=1.7″	x	W= 17.4″	x	D=5″	(4.4 x 44.2 x 12.8 cm)
MediaConverter/12	H=1.7″	x	W= 19″	x	D=9″	(4.4 x 48.3 x 22.9 cm)

IMC Networks Technical Support

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Fax: (949) 465-3020

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Web: www.imcnetworks.com

Fiber Optic Cleaning Guidelines

Fiber Optic transmitters and receivers are extremely susceptible to contamination by particles of dirt or dust, which can obstruct the optic path and cause performance degradation. Good system performance requires clean optics and connector ferrules.

1. Use fiber patch cords (or connectors, if you terminate your own fiber) only from a reputable supplier; low-quality components can cause many hard-to-diagnose problems in an installation.
2. Dust caps are installed at IMC Networks to ensure factory-clean optical devices. These protective caps should not be removed until the moment of connecting the fiber cable to the device. Should it be necessary to disconnect the fiber device, reinstall the protective dust caps.
3. Store spare caps in a dust-free environment such as a sealed plastic bag or box so that when reinstalled they do not introduce any contamination to the optics.
4. If it is suspected that the optics have been contaminated, alternate between blasting with clean, dry, compressed air and flushing with methanol to remove particles of dirt.

Electrostatic Discharge Precautions

Electrostatic discharge (ESD) can cause damage to any product, add-in modules or stand alone units, containing electronic components. Always observe the following precautions when installing or handling these kinds of products

1. Do not remove unit from its protective packaging until ready to install.
2. Wear an ESD wrist grounding strap before handling any module or component. If the wrist strap is not available, maintain grounded contact with the system unit throughout any procedure requiring ESD protection.
3. Hold the units by the edges; do not touch the electronic components or gold connectors.
4. After removal, always place the boards on a grounded, static-free surface, ESD pad or in a proper ESD bag. Do not slide the modules or stand alone units over any surface.

WARNING! Integrated circuits and fiber optic components are extremely susceptible to electrostatic discharge damage. Do not handle these components directly unless you are a qualified service technician and use tools and techniques that conform to accepted industry practices.

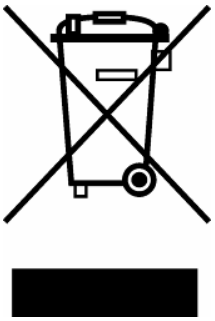
Safety Certifications

UL/CUL: Listed to Safety of Information Technology Equipment, including Electrical Business Equipment.

CE: The products described herein comply with the Council Directive on Electromagnetic Compatibility (2004/108/EC) and the Council Directive on Electrical Equipment Designed for use within Certain Voltage Limits (2006/95/EC). Certified to Safety of Information Technology Equipment, Including Electrical Business Equipment. For further details, contact IMC Networks.

Class 1 Laser product, Luokan 1 Laserlaite,
Laser Klasse 1, Appareil A'Laser de Classe 1

European Directive 2002/96/EC (WEEE) requires that any equipment that bears this symbol on product or packaging must not be disposed of with unsorted municipal waste. This symbol indicates that the equipment should be disposed of separately from regular household waste. It is the consumer's responsibility to dispose of this and all equipment so marked through designated collection facilities appointed by government or local authorities. Following these steps through proper disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about proper disposal, please contact local authorities, waste disposal services, or the point of purchase for this equipment.



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